AMENDMENTS TO THE SPECIFICATION:

Please replace paragraph 1, page 7 with the following amended paragraph.

The primary aspect of the present invention is the modification of portable welder A to include an internal battery charger; however, in accordance with another aspect of the invention, a starting device 60 best shown in FIGURES 1A and 3 is connected to welder A by cable 62 having internal positive and negative leads 64, 66, respectively. Device 60 is used on the battery of an internal combustion automobile so welder A, when needed, can be attached to the device for the purposes of starting the automobile, even when battery 54 is low. This is very advantageous in low temperature climates. In another embodiment, the starter current is provided by the standard battery charger circuit. Welder A has a manual selector switch 70, best shown in FIGURE 1, 2 and 1B with mode positions 72, 74, ~~and~~ 76, and 78 for shifting welder A between the welding mode, ~~and~~ the battery charging mode and the battery eliminator or starting mode and the off position, respectively. A garage or shop having electric arc welder A need not have individual appliances for starting a motor vehicle and charging a battery. Electric arc welder A, between welding operations, is used for these functions.

Please replace paragraph 1, page 9 with the following amended paragraph.

Any type of manual selector switch and logic network is used for changing from the standard welding operation to the battery charger circuit 220. In the illustrated embodiment, when switch 70 is in position 72, a logic 0 is applied to the welding activating line 160. With the welding operation activated, trigger 34 is closed to apply a logic 0 to input 228 of gate 230. This produces a logic1 in line 232 to activate gas solenoid 234 for control of gas flow from tank 10. The trigger causes gas flow from tank 10. The logic 1 on line 232 is directed to NAND gate ~~234~~ 235 to provide a logic 0 in line 236 at the input of NAND 240. As will be described, when switch 70 is in position 72, a logic 1 appears in line 242 to activate NAND gate 240. A logic 1 in line 242 indicates that the battery charger is not activated. With the welder activated, closing of trigger 34 produces a logic 1 in output line 124. When the trigger is open, a logic 0 is in line 124. Thus, trigger 34 starts operation of the gas by relay or solenoid 234 and activates SCR controller 120 to cause welding. Again, this welding operation is the same as normal operation of a portable welder A.

Please replace paragraph 2, page 9 with the following amended paragraph.

When switch 70 is shifted to position 74, welder A is converted to a battery charger through operation of sequencing circuit 220. A logic 0 appears in line 250 at the input of NAND gate 252. This logic 0 produces a logic 1 in line 254 to gate 256. This gives a logic 0 in line 242 and a logic 1 in line 124. This is a constant logic 1 in line 124 and is not interrupted by trigger 34, which is deactivated by switch 70. With switch 70 in position 74, circuit 220 controls power source 110 and the power source is maintained on by the logic 1 in line 124. The operation of circuit 220 is explained in more detail in FIGURE 4 wherein the battery charging circuit operates in three stages identified as stage 300, stage 302 and stage 304. The battery voltage is illustrated as graph 310 and the battery current is shown as graph 312. In stage 300, the battery is illustrated as starting in a discharged state. The charging circuit is operated in a constant current mode so that the signal in line 212 takes over from the comparator 202. The charger current is maintained at a constant value in stage 300 and the battery voltage is allowed to rise as it is being charged. Approximately 80% of the battery capacity is returned in this constant current region where controller 120 is controlled by override circuit 214. When the battery voltage reaches approximately 2.4 volts per cell or 14.6 volts for a 12 volt battery, circuit 220 shifts to stage 302, as shown in FIGURE 4. The charger voltage is then held constant at the higher level and the battery current is allowed to reduce. In this stage, the voltage from comparator 202 is controlled by the reference signal in line ~~226~~ 206. In this stage, the last 20% of the battery capacity is returned during the charging operation by circuit 220. The voltage level is maintained until the battery reduces to approximately C/50 to C/100, where C is the ampere-hour rating of the battery. For instance, if the battery is a 100 ampere-hour battery, the voltage should be maintained at 2.5 volts per cell until the current decreases to 1-2 amperes. This is shown in portion 312a of curve 312. The exact amount of this reduced current is not critical. In stage 304, the charging operation is allowed to float. At this point, the current is reduced to the level 312a and the battery charger merely floats. The float mode is where the voltage on the battery is maintained at approximately 2.25 volts per cell or 13.5 volts for a 12 volt battery. This voltage will maintain the full charge condition of the battery without boiling out electrolyte or over charging the battery. In practice, battery charger circuit 220 normally operates in only

stage 300 and stage 302. Thereafter, the battery is disconnected and ready for normal operation. Consequently, circuit 220 functions in accordance with standard technology set forth and explained with respect to the graphs in FIGURE 4.

Please replace paragraph 1, page 11 with the following amended paragraph.

As so far described, welder A is modified to have an internal, integrated battery charger. This is the basic concept of the present invention allowing the welder to function in two separate and distinct modes. In accordance with another aspect of the invention, the welder is also capable of starting an internal combustion engine by operating the starter when battery 54 is low. This is done either by a high current output from battery charging circuit 220 or by a battery mounted device 60. This third mode of operation using device 60 is accomplished by moving switch 70 to position 76 as shown in FIGURE 1B and in the wiring diagram of FIGURE 2. In this position, line 320 is grounded to produce a logic 0 at the input of switch 322 and a logic 0 in line 324. This connects cable 62 with leads 64, 66 to starting device 60, best shown in FIGURE 3. Consequently, when cable 62 is connected to device 60 and switch 70 is moved to position 76, the starter motor of the internal combustion engine is driven directly by current source 100. This is illustrated best in FIGURE 3 using the overall diagram of FIGURE 1A. Device 60 is attached to power stud 56 of battery 54 and includes a plastic housing 330 with a mounting clamp 332 to clamp the housing over power stud 56 by forcing the ends of clamp 332 together by bolt ~~344~~ 334. Housing 330 also has a fixed post 340 so clamp 342 on lead 64 can be attached to the post by bolt 344, similar to the action of clamp 332. Consequently, housing 330 remains with the battery 54 at all times. When it is necessary to start the internal combustion engine because battery 54 is low, such as during extremely cold temperature, clamp 342 is attached to external fixed post 340 of housing 330. This connects lead 64 to post 340. The post is the input to a bypass switch or circuit 350 having an input 352 from clamp 332 and, thus, power stud 56 of battery 54. Output 354 of circuit or switch 350 is connected inside the housing with a dummy stud 360 permanently fixed by a clamp to lines 362 constituting the input of the electrical system for a motor vehicle. Line 362 goes directly to starter motor 370. The motor is always connected to the dummy stud. When it is necessary to start the engine by operation of motor 370, cable 62 is connected to post 340 of

housing 300 and switch 70 is moved to position 76. This immediately starts the engine. Then the clamp 342 is removed and the engine operates. The purpose of bypass switch or circuit 350 is to guarantee that current from power source 100 is directed to the dummy stud 360 and not to the actual power stud 56 of battery 54. During normal operation, bypass switch or circuit 350 merely passes current from stud 56 through lines 352, 354 to dummy stud 360. Thus, with housing 300 assembled onto battery 54 by clamp 332, the battery operates normally. When the battery is low or can not start the engine, clamp 342 of lead 64 from welder W is applied onto post 340 and the starter is driven directly by the welder.